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WHAT IS CLAIMED IS:

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1. Apparatus for generating a fluid flow, said apparatus comprising:
- a displacement pump
 - with at least one flow vessel of deformable lumen, which serves to conduct a fluid,
 - with a pump drive for producing displacement motions of the flow vessel which deform the lumen and cause the fluid flow, and
 - with a support means for holding the flow vessel; and
 - a measuring arrangement responsive to the displacement motions performed by the flow vessel,
 - with a pressure sensor for sensing a static pressure in the fluid and providing a sensor signal representative of the displacement motions, and
 - with evaluation electronics for the sensor signal.
2. Apparatus as claimed in claim 1, wherein the evaluation electronics are being operable to derive from the sensor signal a flow rate estimate representative of an instantaneous volume flow rate of the fluid.
3. Apparatus as claimed in claim 1, wherein the evaluation electronics are being operable to derive from the sensor signal a first measurement signal representative of a frequency of the displacement motions.
4. Apparatus as claimed in claim 1, wherein the evaluation electronics are being operable to derive from the sensor signal a volume estimate representative of a totalized volume of fluid delivered.

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5. Apparatus as claimed in claim 1, wherein the evaluation electronics are being operable to derive from the sensor signal a status signal representative of a current operational status of the displacement pump.

6. Apparatus as claimed in claim 1, wherein the evaluation electronics are being operable to derive from the sensor signal a second measurement signal representative of a suction head of the apparatus.

7. Apparatus as claimed in claim 1, wherein the pump drive is a rotary pump drive.

8. Apparatus as claimed in claim 1, wherein the pump drive is a linear pump drive.

9. A sampler with an apparatus for generating a fluid flow, said apparatus comprising:

- a displacement pump
- with at least one flow vessel of deformable lumen, which serves to conduct a fluid,
- with a pump drive for producing displacement motions of the flow vessel which deform the lumen and cause the fluid flow, and
- with a support means for holding the flow vessel; and
- a measuring arrangement responsive to the displacement motions performed by the flow vessel,
- with a pressure sensor for sensing a static pressure in the fluid and providing a sensor signal representative of the displacement motions, and
- with evaluation electronics for the sensor signal.

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10. Sampler as claimed in claim 9, wherein the evaluation electronics are being operable to derive from the sensor signal a flow rate estimate representative of an
5 instantaneous volume flow rate of the fluid.

11. Sampler as claimed in claim 9, wherein the evaluation electronics are being operable to derive from the sensor signal a first measurement signal representative of a
10 frequency of the displacement motions.

12. Sampler as claimed in claim 9, wherein the evaluation electronics are being operable to derive from the sensor signal a volume estimate representative of a totalized
15 volume of fluid delivered.

13. Sampler as claimed in claim 9, wherein the evaluation electronics are being operable to derive from the sensor signal a status signal representative of a current
20 operational status of the displacement pump.

14. Sampler as claimed in claim 9, wherein the evaluation electronics are being operable to derive from the sensor signal a second measurement signal representative of a
25 suction head of the apparatus.

15. Sampler as claimed in claim 9, wherein the pump drive is a rotary pump drive.

30 16. Sampler as claimed in claim 9, wherein the pump drive is a linear pump drive.

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17. Sampler as claimed in claim 9, wherein said Sampler is a mobile Sampler

18. Sampler as claimed in claim 9, wherein said Sampler is a portable Sampler

19. Apparatus for generating a fluid flow, said apparatus comprising:

- a displacement pump
- with at least one flow vessel of deformable lumen, which serves to conduct a fluid,
- with a pump drive for producing displacement motions of the flow vessel which deform the lumen and cause the fluid flow, and
- with a support means for holding the flow vessel, --- the flow vessel being compressed by the pump drive in operation temporarily and in sections and forced against the support means such that the support means is elastically strained; and
- a measuring arrangement responsive to the displacement motions performed by the flow vessel,
- with a strain sensor for sensing a strain of the support means and providing a sensor signal representative of the displacement motions performed by the flow vessel, and
- with evaluation electronics for the sensor signal.

20. Apparatus as claimed in claim 19, wherein the evaluation electronics are being operable to derive from the sensor signal a flow rate estimate representative of an instantaneous volume flow rate of the fluid.

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21. Apparatus as claimed in claim 19, wherein the evaluation electronics are being operable to derive from the sensor signal a first measurement signal representative of a frequency of the displacement motions.

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22. Apparatus as claimed in claim 19, wherein the evaluation electronics are being operable to derive from the sensor signal a volume estimate representative of a totalized volume of fluid delivered.

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23. Apparatus as claimed in claim 19, wherein the evaluation electronics are being operable to derive from the sensor signal a status signal representative of a current operational status of the displacement pump.

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24. Apparatus as claimed in claim 19, wherein the pump drive is a rotary pump drive.

25. Apparatus as claimed in claim 19, wherein the pump drive is a linear pump drive.

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26. A sampler with an apparatus for generating a fluid flow, said apparatus comprising:

- a displacement pump

25 -- with at least one flow vessel of deformable lumen, which serves to conduct a fluid,

-- with a pump drive for producing displacement motions of the flow vessel which deform the lumen and cause the fluid flow, and

30 -- with a support means for holding the flow vessel,

--- the flow vessel being compressed by the pump drive in operation temporarily and in sections and forced

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-- with a strain sensor for sensing a strain of the support means and providing a sensor signal representative of the displacement motions performed by the flow vessel, and

27. Sampler as claimed in claim 26, wherein the evaluation electronics are being operable to derive from the sensor signal a flow rate estimate representative of an instantaneous volume flow rate of the fluid.

28. Sampler as claimed in claim 26, wherein the evaluation electronics are being operable to derive from the sensor signal a first measurement signal representative of a frequency of the displacement motions.

29. Sampler as claimed in claim 26, wherein the evaluation electronics are being operable to derive from the sensor signal a volume estimate representative of a totalized volume of fluid delivered.

30. Sampler as claimed in claim 26, wherein the evaluation electronics are being operable to derive from the sensor signal a status signal representative of a current operational status of the displacement pump.

31. Sampler as claimed in claim 26, wherein the pump drive is a rotary pump drive.

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32. Sampler as claimed in claim 26, wherein the pump drive is a linear pump drive.

5 33. Sampler as claimed in claim 26, wherein said Sampler is a mobile Sampler

34. Sampler as claimed in claim 26, wherein said Sampler is a portable Sampler

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35. Method of monitoring an apparatus serving to generate a fluid flow and comprising:

- a displacement pump

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-- with at least one flow vessel of deformable lumen, which serves to conduct a fluid,

-- with a pump drive for producing displacement motions of the flow vessel which deform the lumen and cause the fluid flow,

-- with a drive motor for the pump drive, and

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-- with a support means for holding the flow vessel; and

- a measuring arrangement responsive to the displacement motions of the flow vessel and comprising a pressure sensor for sensing a static pressure in the fluid, said method comprising the steps of:

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- causing drive motions of the drive motor for producing the displacement motions of the flow vessel;

- sensing the pressure with the pressure sensor for generating a sensor signal representative of the displacement motions; and

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- deriving from the sensor signal a status signal signaling a current operational status of the apparatus.

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36. Method of monitoring a sampler with an apparatus serving to generate a fluid flow, said apparatus comprising:

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- 5 -- with at least one flow vessel of deformable lumen, which serves to conduct a fluid,
- with a pump drive for producing displacement motions of the flow vessel which deform the lumen and cause the fluid flow,
- 10 -- with a drive motor for the pump drive, and
- with a support means for holding the flow vessel; and
- a measuring arrangement responsive to the displacement motions of the flow vessel and comprising a pressure sensor for sensing a static pressure in the fluid,
- 15 said method comprising the steps of:
- causing drive motions of the drive motor for producing the displacement motions of the flow vessel;
- sensing the pressure with the pressure sensor for generating a sensor signal representative of the
- 20 displacement motions; and
- deriving from the sensor signal a status signal signaling a current operational status of the apparatus.
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